Tinker Air Force Base Raster Transfer

Submitted By:

Image Memory Systems For:

Battelle Memorial Institute

E-3A Sixport Waveguide Switch
Contract #F04606-89-D-0034-SD02

MIL-R-28002A (Raster)

Quick Short Test Report

22 March 1994

19960822 062

DTIC QUALITY INSPECTED 3

Tinker Air Force Base Raster Transfer
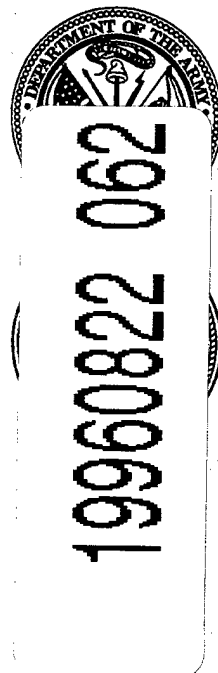
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Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

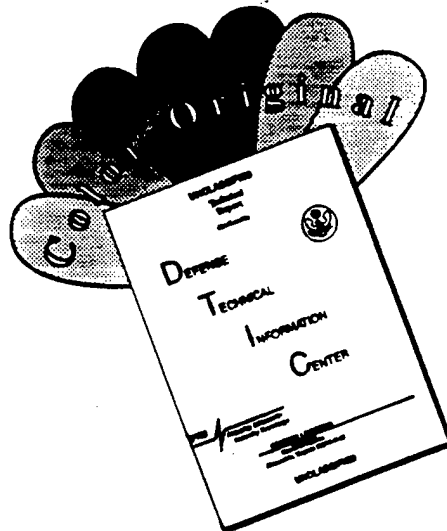**AFCTN Contact**
Mel Lammers
(513) 427-2295

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Air Force CALS Test Bed

Notification of Test Results

22 March 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

Image Memory Systems

Identified as follows:

Title:	**Tinker Air Force Base Raster Transfer**
Program:	**E-3A Sixport Waveguide Switch**
Program Office:	**ALC/TILDOE**
Contract No.:	**F04606-89-D-0034-SD02**
QSTR No.:	**AFCTB-ID 94-013**

Received on the following media: **9-Track Tape**

The results of the AFCTB Quick Short Test evaluation are as follows:

MIL-STD-1840A Media Format:	**Fail**
MIL-D-28000A IGES:	**N/A**
MIL-M-28001A SGML:	**N/A**
MIL-R-28002A Raster:	**Pass**
MIL-D-28003 CGM:	**N/A**

Formal results with associated disclaimer are documented and available from the AFCTB.

<div align="center">

Air Force CALS Test Bed
HQ ESC/AV-2P
4027 Colonel Glenn Highway, Suite 300
Dayton, OH 45431-1672
Phone: 513-257-3085   FAX: 513-257-5881

</div>

Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Image Memory Systems' and Battelle Memorial Institute's interpretation and use of the CALS standards in transferring technical Raster data. Image Memory Systems used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 94-013

**Date of
Evaluation:**   22 March 1994

Evaluator: George Elwood
                               Air Force CALS Test Bed
                               DET 2 HQ ESC/AV-2P
                               4027 Colonel Glenn Hwy
                               Suite 300
                               Dayton   OH   45431-1672

**Data
Originator:**   John Pugnale
                               Image Memory Systems
                               6000 Webster Street
                               Dayton OH 45414
                               (513) 890-5022

                               Scott Smith
                               Battelle Memorial Institute
                               505 King Street
                               Columbus OH 43201-2693
                               (614) 424-4561

**Data
Description:**   Technical Manual Test
                                     3 Document Declaration files
                                     3 Raster files

**Data
Source System:**
                    1840
                               HARDWARE
                                     M4 9-Track Tape Drive
                               SOFTWARE
                                     Novastor TPU 4.10A

                    Raster
                          HARDWARE
                                    PC 486
                          SOFTWARE
                                    AUTODESK *AutoCAD R12*
                                    Image Systems Technology, Inc.
                                              CAD Overlay ESP 4.0
                                    Houston Instruments *JetView Pro 1.1*
                                    AFCTN *Headedit*

Evaluation Tools Used:

          MIL-STD-1840A (TAPE)
                    SUN 3/280
                              AFCTN *Tapetools v1.2.10 UNIX*
                              XSoft *CAPS/CALS v40.4*

          MIL-R-28002 (Raster)
                    HP 735
                              AFCTN *xrastb.hp*
                              InterCAP *X-Change v7.82*
                    SGI Indigo2
                              AFCTN *xrastb.sgi*
                              IGES Data Analysis (IDA) *CALSView*
                    SUN SparcStation 2
                              Carberry *CADLeaf Plus v3.1*
                              AFCTN *validg4*
                              AFCTN *xrastb.sun4*
                              IDA *IGESView v3.0*
                              Island Graphics *IslandPaint v3.0*
                              Rosetta Technologies *Prepare*
                              Rosetta Technologies *Preview*
                    PC 486

                              IDA *IGESView Windows*
                              Inset Systems *HiJaak Pro*
                              Expert Graphics *RxHighlight v1.0*
                              Rosetta Technologies *Prepare*
                              Rosetta Technologies *Preview*

Standards
Tested: MIL-STD-1840A
                              MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) en-
closed in a box in accordance with ASTM D 3951. The exte-
rior of the box was marked with a magnetic tape warning
label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by
MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel
showed the label indicating the recording density as re-
quired by MIL-STD-1840A, para. 5.3.1. Enclosed in the box
was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-
1840A files. The files were named per the standard conven-
tions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.10* utility.
Twelve errors and three notes were encountered while evalu-
ating the contents of the tape labels. All of the errors
relate to a character placed in a reserved space in the tape
headers. This is an ANSI error. The error was traced to
the second zero (0) in the group shown below. This may be
an added or misplaced digit in the offset length block.

```
HDR2D0204800260                        B              00

   Label Identifier: HDR2
   Recording Format: D
   Block Length: 02048
   Record Length: 00260
   Offset Length:  0
```

*** ERROR (ANSI X3.27; 8.5.1.1) - Columns 53-80 are reserved
     for future standardization and must be spaces.

Two notes were reported in file D001R001 and D002R001. The AFCTB *Tapetool* reported an incomplete last block. Some tape systems will not process short block information resulting in a lose of data.

*** NOTE - Last block was incomplete. Short blocks are
    proned to be interpreted as noise by some tape drives.
    Tape Label => 2048, Actual => 512, Block Number => 33

A note was reported on the tape label version. MIL-STD-1840A permits the use of both version three and four. The most current standard should be used and noted.

The tape was read using XSoft's *CAPS read1840A* utility without any reported errors. When the files were checked, only one Document Declaration file and one Raster file were noted. This was caused by the renaming function in the software which used the same name for each file, resulting in only the last file being maintained.

Because of the reported errors in the tape headers, the tape does not meet the physical structure requirements defined in the CALS MIL-STD-1840A.

3.2.2 Declaration and Header Fields

No errors were reported in the Document Declaration file and data file headers. This portion of the tape meets the requirements defined in MIL-STD-1840A.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included in this evaluation.

6. Raster Analysis

The tape contained three Raster files. All files were evaluated using the AFCTN *validg4* utility. This program reported that all files meet the CALS MIL-R-28002A specification.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were read into the AFCTN *xrastb.sun4*, *xrastb.sgi*, and *xrastb.hp* viewing utility. No problems were noted.

The files were converted using another utility available within the AFCTB without a reported error. The resulting files were read into Island Graphics' *IslandPaint* and displayed.

The Raster files were read into Carberry's *CADLeaf* software without a reported error and displayed.

The files were read and displayed using IDA's *CALSView.*

The files were read into IDA's *IGESView* and *IGESView for Windows*, displayed and printed without a reported error.

The files were read into Inset Systems' *HiJaak for Windows* without a reported error.

The files were read and displayed using InterCAP's *X-Change* without a reported error.

The Raster files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into Rosetta Technologies' *Preview* and displayed.

The Raster files were imported into Expert Graphics' *RxHighlight,* displayed and printed without a reported error.

The three Raster files were imported into all of the Raster tools available in the AFCTB. No problems were encountered during this operation. It was noted that some letters in files R101 and R301 ran together. The letters that displayed this characteristic were letters with horizontal lines like "E", "T", and "L". Anytime one of these letters occurred in text, an extension was noted to the next letter. The source of this problem is not known.

The Raster files meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included in this evaluation.

8. Conclusions and Recommendations

The tape submitted by Image Memory Systems had errors in the basic ANSI tape header construction, due to a character in the ANSI 3.27 reserved space. The ANSI tape header does not meet the CALS MIL-STD-1840A requirements. The physical structure of the CALS headers and Document Declaration file had no reported errors and meet the CALS MIL-STD-1840A requirements.

The three Raster files meet the CALS MIL-R-28002A specification. What appears to be a conversion error is noted in some of the text.

The tape submitted by Image Memory Systems does not meet the CALS MIL-STD-1840A requirements due to the errors in the ANSI tape header construction.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                    for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Mar 18 12:41:02 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set051

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted
D003	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000033	Extracted
D002R001	Raster	F/00128	02048/000017	Extracted
D003R001	Raster	F/00128	02048/000056	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                         for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Mar 18 12:40:55 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1BMI001   CALS   3

   Label Identifier: VOL1
   Volume Identifier: BMI001
   Volume Accessibility:
   Owner Identifier: CALS
   Label Standard Version: 3

*** NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version
    should be 4 to represent the current level of ANSI X3.27.

HDR1D001   BMI001000100010000   94074 00000 000000

   Label Identifier: HDR1
   File Identifier: D001
   File Set Identifier: BMI001
   File Section Number: 0001
   File Sequence Number: 0001
   Generation Number: 0000
   Generation Version Number:
   Creation Date: 94074
   Expiration Date: 00000
   File Accessibility:
   Block Count: 000000
   Implementation Identifier:

HDR2D0204800260   B   00

Label Identifier: HDR2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 0

*** ERROR (ANSI X3.27; 8.5.1.1) - Columns 53-80 are reserved
    for future standardization and must be spaces.

                    <<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

HDR1D001R001   BMI001000100040000   94074 00000 000000

  Label Identifier: HDR1
  File Identifier: D001R001
  File Set Identifier: BMI001
  File Section Number: 0001
  File Sequence Number: 0004
  Generation Number: 0000
  Generation Version Number:
  Creation Date: 94074
  Expiration Date: 00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2F0204800128   B   00

  Label Identifier: HDR2
  Recording Format: F
  Block Length: 02048
  Record Length: 00128
  Offset Length: 0

*** ERROR (ANSI X3.27; 8.5.1.1) - Columns 53-80 are reserved
    for future standardization and must be spaces.

*********** Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
    proned to be interpreted as noise by some tape drives.
    Tape Label => 2048, Actual => 512, Block Number => 33

  Number of data blocks read = 33.

*********** Tape Mark ***************

EOF1D001R001   BMI001000100040000   94074 00000 000033

<<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

************ Tape Mark ***************

************ Tape Mark ***************

############ End of Volume BMI001 #############

############ End Of Tape File Set #############

Deallocating /dev/rmt0...

Tape Import Process terminated with 12 error(s), 0 warning(s),
and 3 note(s).

9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Fri Mar 18 12:41:02 1994
MIL-STD-1840A File Set Evaluation Log
File Set: Set051

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2693, Cage Co
79986
srcdocid: X18264519
srcrelid: 18264502
chglvl: ORIGINAL
dteisu: 19930209
dstsys: U S Air Force, Tinker AFB, OK
dstdocid: TO BE ASSIGNED
dstrelid: NONE
dtetrn: 19940314
dlvacc: NONE
filcnt: R001
ttlcls: UNCLASS
doccls: UNCLASS
doctyp: NONE
docttl: Drive Housing Bracket

Found file: D001R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: X18264519
dstdocid: TO BE ASSIGNED
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASS
rtype: 1
rorient: 000,270
rpelcnt: 004400,006800
rdensty: 0200
notes: NONE

Saving Raster Header File: D001R001_HDR
Saving Raster Data File: D001R001_GR4

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

Found file: D002
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2693, Cage Co
79986
srcdocid: PL18261105
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930805
dstsys: U S Air Force, Tinker AFB,
dstdocid: TO BE ASSIGNED
dstrelid: NONE
dtetrn: 19940314
dlvacc: NONE
filcnt: R001
ttlcls: UNCLASS
doccls: UNCLASS
doctyp: PL
docttl: Electronic Case Assembly

Found file: D002R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: PL18261105
dstdocid: TO BE ASSIGNED
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASS
rtype: 1
rorient: 000,270
rpelcnt: 002312,003201
rdensty: 0300

notes: NONE

Saving Raster Header File: D002R001_HDR
Saving Raster Data File: D002R001_GR4

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

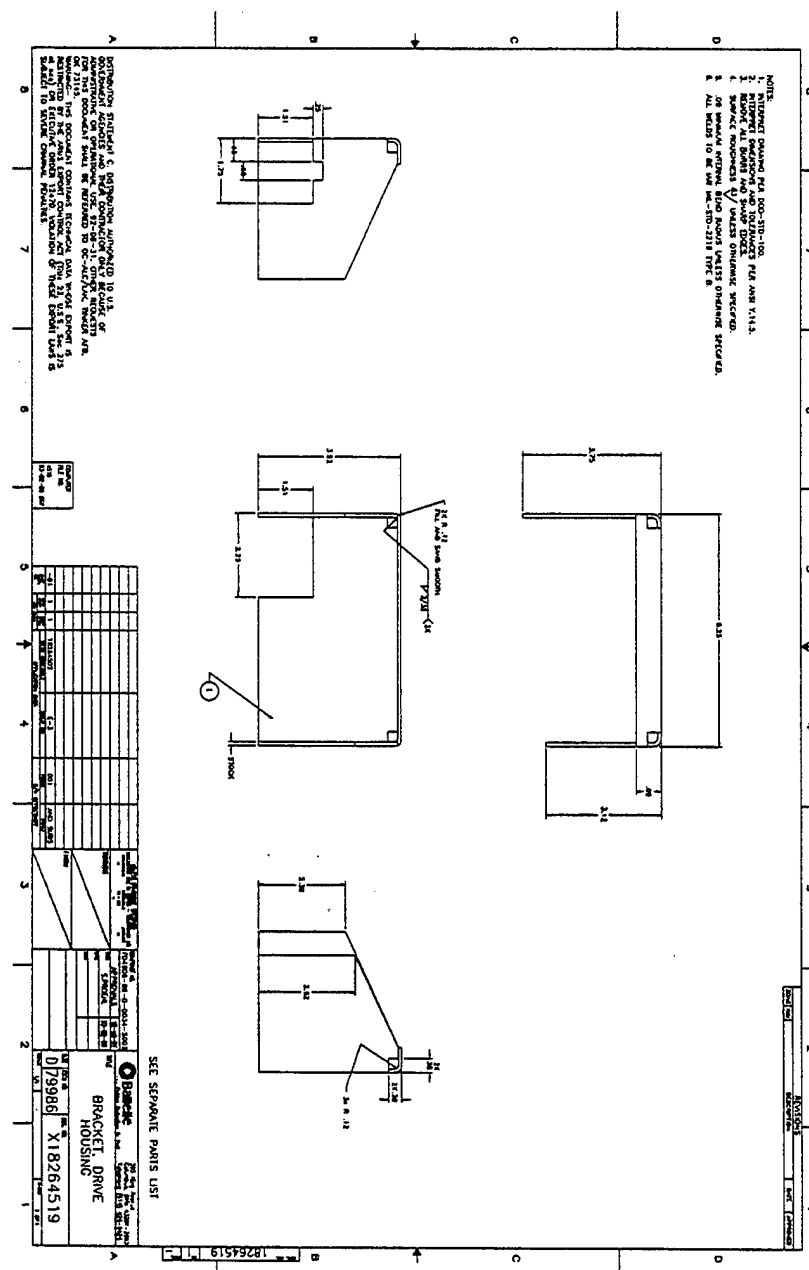No errors were encountered in Document D002.

Found file: D003
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2693, Cage Co
79986
srcdocid: X18262101
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19920619
dstsys: U S Air Force, Tinker AFB,
dstdocid: TO BE ASSIGNED
dstrelid: 18261100
dtetrn: 19940314
dlvacc: NONE
filcnt: R001
ttlcls: UNCLASS
doccls: UNCLASS
doctyp: NONE
docttl: Electronics Housing Assembly

Found file: D003R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: X18262101
dstdocid: TO BE ASSIGNED
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASS
rtype: 1
rorient: 000,270

rpelcnt: 006832,004476
rdensty: 0200
notes: NONE

Saving Raster Header File: D003R001_HDR
Saving Raster Data File: D003R001_GR4

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D003.

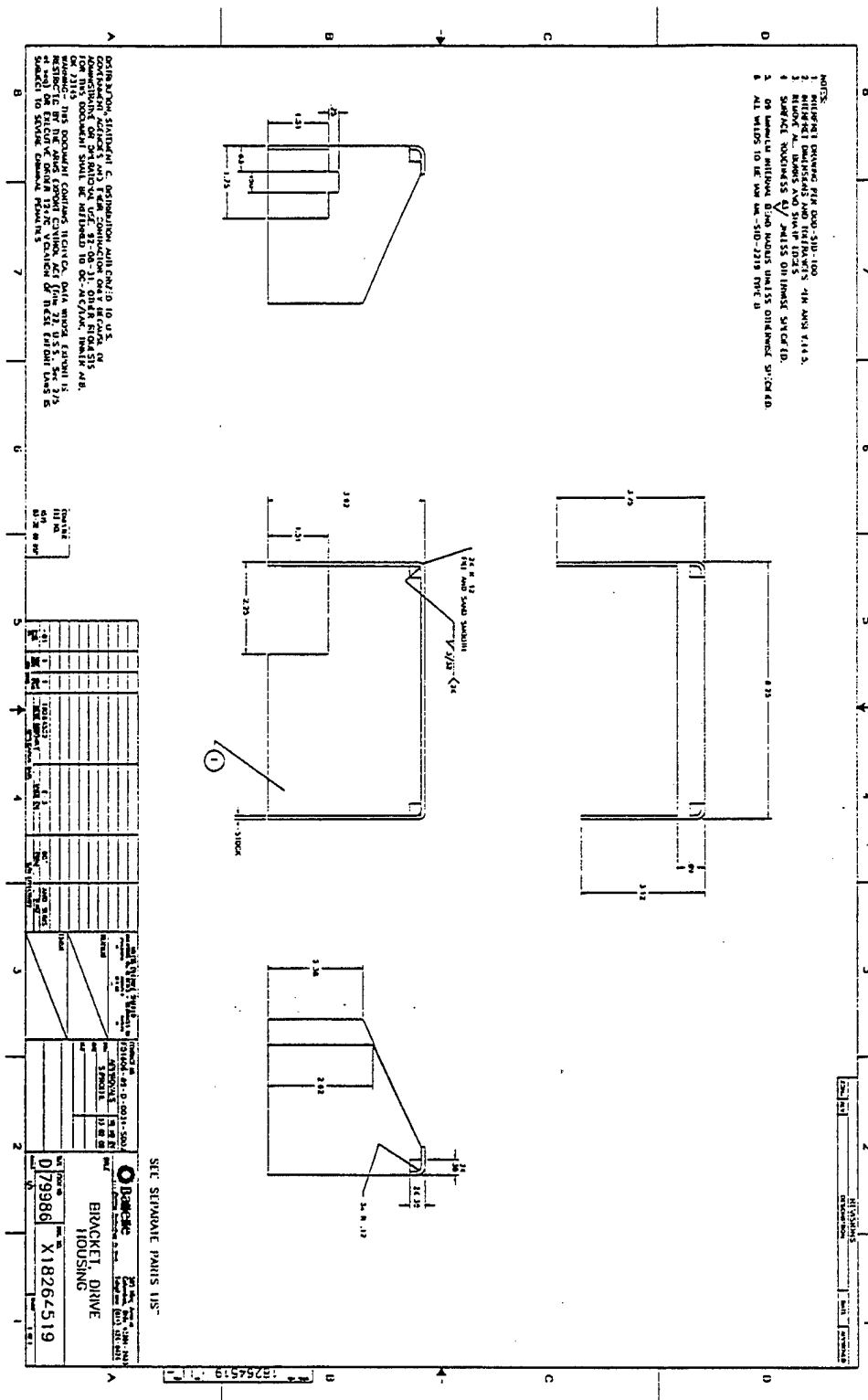No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

9.4 Other Tape Reading Logs

```
/cals/caps/Bin/read1840A: --- Read declaration file 'D001     ' ---
/cals/caps/Bin/read1840A: --- Read declaration file 'D002     ' ---
/cals/caps/Bin/read1840A: --- Read declaration file 'D003     ' ---
/cals/caps/Bin/read1840A: writing data file '94013/TOBEASSIGNED/TOBEASSIGNED1.R.cci'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 0 files of type Q
-- declaration file indicates 1 files of type R
-- declaration file indicates 0 files of type C
-- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
/cals/caps/Bin/read1840A: writing data file '94013/TOBEASSIGNED/TOBEASSIGNED1.R.cci'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 0 files of type Q
-- declaration file indicates 1 files of type R
-- declaration file indicates 0 files of type C
--- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
/cals/caps/Bin/read1840A: writing data file '94013/TOBEASSIGNED/TOBEASSIGNED1.R.cci'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 0 files of type Q
-- declaration file indicates 1 files of type R
-- declaration file indicates 0 files of type C
-- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
```

10. Appendix B - Detailed Raster Analysis

10.1 File D001R001

10.1.1 Output IGESView

10.1.2 Output RxHighlight

10.2 File D002R001

10.2.1 Output IGESView

PARTS LIST: PL18261105
TITLE: Electronic Case Assembly
CONTRACT NO.: F04606-89-D-0034-5D02

BATTELLE MEMORIAL INSTITUTE
505 KING AVENUE, COLUMBUS, OH 43201
CAGE CODE 79986

ORIG DATE: 92-04-17   EO NO.: 3199   APPROVAL: [signature]   DATE: 93-08-05   REVISION: A   AUG 16 1993   SHEET 1 OF 1

Item No.	Qty Rqd Per	Part or Identifying No.	Cage No.	Specification/ Document Number	Nomenclature or Document Title	Notes
1	-10	18261106-01	79986		Wall, Outer Case Electronic Housing	
2	1	18261107-01	79986		Wall, Inner Case Electronic Housing	
3	AR			MIL-C-83286	Coating Urethane, Aliphatic Isocyanate Color Number 17925 IAW FED-STD-595	
4	AR			MIL-P-23377	Primer Coating, Epoxy, Polyamide Chemical and Solvent Resistant	

10.2.2 Output RxHighlight

PARTS LIST: PL18261105
TITLE: Electronic Case Assembly
CONTRACT NO.: F04606-89-D-0034-SD02

ORIG DATE: 92-04-17   EO NO.: 3199   APPROVAL: _____ DATE: 93-08-05   REVISION: A

BATTELLE MEMORIAL INSTITUTE
505 KING AVENUE, COLUMBUS, OH 43201
CAGE CODE 79986

SHEET 1 OF 1
RELEASED
AUG 16 1993

Item No.	Qty Rqd Per -10	Part or Identifying No.	Cage No.	Specification/ Document Number	Nomenclature or Document Title	Notes
1	1	18261106-01	79986		Wall, Outer Case Electronic Housing	
2	1	18261107-01	79986		Wall, Inner Case Electronic Housing	
3	AR			MIL-C-83286	Coating Urethane, Aliphatic Isocyanate Color Number 17925 IAW FED-STD-595	
4	AR			MIL-P-23377	Primer Coating, Epoxy, Polyamide Chemical and Solvent Resistant	

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10.3 File D003R001

10.3.1 Output IGESView

10.3.2   Output IGESView Detail

TEM 1) WITH ITEM 11.

IG FILTER PLATE (ITEM 3) TO

) IN ACCORDANCE WITH WL18:

(J2) (ITEM 8) TO POWER CIRC

CORDANCE WITH WL18262101

IG FILTER PLATE ASSEMBLY (II

SEMBLY (ITEM 4) IN ACCORDAI

ASSEMBLY (ITEM 4) TO CONT

IN ACCORDANCE WITH WL182.

TIVE CAULK (ITEM 24) TO JUN

LTER ASSEMBLY (ITEM 3) AND

10.3.3 Output RxHighlight